



Predictive Modeling: *The Yellow Brick Road to Strategic HR*

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Human Resources? How does an HR professional think strategically for the business? Let's examine what a business needs to concern itself with in order to survive and grow. Critical information is:

1. Who are my customers?
2. How many customers do I potentially have?
3. What do they want to buy?
4. How much will they pay for it?
5. How much will it cost to provide this product to my customers?
6. How will I pay for the cost of this product and how long will it take me to create the product and deliver it to my customers?

Obviously, strategic planning for a business has to be heavily based on finance. Cash flow management is critical, because without it a business can run short of funds when marketing is needed, such as an unexpected opportunity to seize market share. Cash flow management is critical to the ebb and flow of income versus expenses and demands constant attention.

Financial Impacts of Managing Health Care Risk and Expense

One such area where HR can make a tremendous impact on the financial status of a company is in the area of managing the risk and expense of health plans, particularly when the health plan is self-insured. Managing health insurance expense is equal to managing approximately 15 to 20 percent of a company's gross payroll. When this expense spikes and as long as it escalates, it has the capability to severely hamper a company's cash flow and its ability to respond quickly to market fluctuations or new opportunities. By analyzing and investigating every opportunity to manage and reduce the expense of healthcare, an HR professional becomes a "strategic" partner. Why? Because they are doing something that impacts the money, and as noted earlier – for a business – everything that impacts the money is considered strategic.

As a former HR practitioner who spent many years managing the cost of healthcare benefits, I know intimately how much attention the executive team gives any expense that runs 15 to 20 percent of gross payroll. As health plan renewal time loomed each year, the discussions with our benefit consultants began. Negotiations with insurance providers would take place as I tried to negotiate the best rates. Then inevitably dealing with a rate increase anyway, I would work to develop a method to share the cost and communicate the changes.

Strategic Use of Predictive Modeling

Every year my executive team would ask me what I was doing to minimize the rate increase and why did things continue to escalate, i.e., why didn't I have better risk management? And every year, I would talk about trends, increases in new medical technology, our aging workforce, the recommendations from our benefit consultants, and the changes we had made to improve next year's performance.

Every year I followed the same formula without realizing I was missing a golden opportunity to be a strategic partner and to prove how valuable I was to the company's future success. That opportunity was present in the strategic use of predictive modeling to manage healthcare risk, though never so accessible as it has become in the last five years. I am an advocate of predictive modeling because I quite accidentally experienced the power of good data. While working internally in employee benefits management, I conducted a study of healthcare expenses. Our goal was – as always – to determine why our expenses continued to escalate and prepare for budgeting. The study took hundreds of man-hours and thousands of contractor dollars to process the data in the forms we had available to us. But the results of the analysis were startling. We discovered that – while the national average for health care costs per employee in 2001 was approximately US\$7,800, our national average was running at US\$9,300 and in one specific geographic area, it was US\$13,400 per employee. That information prompted an entirely new project to address specific areas of concern where



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we felt certain we could impact the costs. Shortly afterwards, I was introduced to predictive modeling software and I realized the power and ease with which I could have accomplished the same task at a fraction of the time and expense. Insurance carriers, to analyze healthcare data and predict future expenses, have long used predictive modeling.

Insurance carriers have used the data revealed in their processing of claims to plan for their risk in the future. They analyze and calculate your rate increases based on the picture of the health of your population that is provided by the claims experience and by current medical trends. Insurance carriers create this picture using predictive modeling software that is now available to employers using self-insured healthcare programs.

Until now, you, the purchaser of the health plan, didn't have access to this information and were left to accept the translation of data through the insurance carrier's explanation. Their method of providing data and reports was according to their technical systems' capabilities and your willingness to pay for customized reporting – if it could be developed to meet your needs. With the implementation of HIPAA requirements, employers have been forced to accept even weaker reporting in favor of ensuring compliance with regulations. However, you can manage your risk more effectively – and do it legally – if you have the real data and the analytical tools to process it, understand it and use it.

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Predictive modeling software uses data that is supplied from normal processing of self-insured health claims and data that is current medical best practices to compare and identify areas of concern. The software uses mathematical equations to analyze the aggregate data and filter out problem areas in a variety of ways. For example, the first layer of the picture that emerges might be that an employer's population has a higher than expected number of covered individuals with a diagnosis of diabetes. In reviewing the data on this group, it may become obvious that it is concentrated in a specific geographic area. Further analysis of other data measurements such as prescription trends, pricing in the area, and correlating obesity indicators, might reveal that physicians in this area are prescribing drugs that are less effective than newer drugs or that lifestyle issues in this geographic area are leading drivers of aggravation of the disease. Without identifying a specific individual, an employer can learn that attention to disease management and lifestyle education in this area has great potential to decrease employees' health issues and, therefore, the associated expenses.

With the help of a third party and establishment of a blind process to protect the identity of the individual, an employer can also find ways to educate specific populations to improve their health. This is a win-win situation for both the employer and the employee/dependent. As their health improves, their lifestyle improves and the employer's expenses go down. Encouraging employees to practice better health habits is really addressing the drivers of increased health expenses. Using the analysis of the data as a foundation, the employer or the employer's agent, can develop methods to impact costs that directly affect employees' behavior. Your data can show how frequently the individual goes for routine check-ups, and the number below the accepted standard practice implies they are neglecting preventive practices that would make them healthier and manage chronic conditions more effectively. If the individual can be encouraged to improve their lifestyle and management of any conditions, their life will logically improve because they will feel better – and an important side benefit is the reduction of the health expenses for the employer.

This picture emerges when the data relevant to an individual's health assessment can be analyzed in the aggregate. Attention to individuals can be accomplished through an agent. By loading data from all the different insurance plans into one system and analyzing what types of services and diagnoses are prevalent in an individual's history, a full picture of the individual's health emerges along with possible steps to improve it. The data is then compared to best practices medical data already loaded into the same analytical system. The comparison reveals chronic conditions and how effectively the individual is managing it.

It's important to emphasize here that I am not advocating employer's access to private health information. In fact, I am advocating a third-party relationship to remove the employer from temptation. But, it also true that the rule of thumb that 80 percent of the expenses come from 20 percent of the population holds true, and anything that can impact that 20 percent of the population is good for the whole population when it results in lower out-of-pocket expenses. It would



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be better for all employees not to be burdened by a 10 percent increase in health premiums and a three percent merit raise.

Companies are springing up that are making predictive modeling software available to wellness programs, thirdparty administrators, and consultants who can work with an employer to mine the data and protect individual privacy. Your first reaction may be to cry “foul!” The employer has no right to see the medical information on its employees and their dependents – that information is protected under the HIPAA regulations! And you are right. The information is protected and with good reason – private health information is very powerful and, in the wrong hands, could be used in a discriminatory manner. But there are ways for employers to use outside vendors to analyze the data and protect the employee’s information. The use of third parties to analyze the data and develop methods to improve the employee’s or dependent’s health habits can have an impact on the health of the employee in a positive way, not only improving the lifestyle of the employee or dependent but also managing the risk of the employer and reducing potential future expenses. Jack McCain, contributing editor for *Managed Care Magazine*, reminds us in an article that predictive modeling is mathematical software. As such, the models “range from relatively simple linear equations to sophisticated software that uses neural networks to accommodate intricate nonlinear relationships.” What better way to treat data objectively than through a mathematical model that analyzes the data objectively based on known statistical probabilities?

It is much more protective of an employee’s identity and much more accurate than considering service reports or trends supplied by the insurance company. Analysis of the data is conducted using hundreds of algorithms that analyze the different components of an insurance claim. Examples of the types of components fed into calculations are date-of-birth, gender, diagnosis code, ethnicity, currently prescribed medications, weight, and a variety of diagnostic information contained on every health claim. When combined with historical data, trend data, and medical diagnostic tools, the people in a population that are in danger of future catastrophic needs can be identified. Identifying those employees and dependents creates the opportunity to help them better manage their health. Increasing their healthiness decreases costs associated with poor health management. It’s just that simple.

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Companies like D2Hawkeye, DxCG, and Urix are providing predictive modeling software with analytical tools to the medical and insured communities. Often, the analytical capabilities are provided through third-party administrators, insurance partners or consultants. These alliances create a powerful model that the employer can tap into to increase their risk management capabilities with regard to healthcare expenses.

Predictive modeling starts with the minute details that are part of every health care claim and every prescription purchase. It can consider the geographic area where the service took place, the physicians that were involved with the services, the average fees and expectations for the area and the current expected trends. It aggregates all of this information and can provide to the viewer a look at the grains of sand or the 50,000-foot view. The software aggregates the data supplied by companies paying claims for the employer under a contractual agreement called an administrative services only (ASO) contract. An example of such an arrangement would be a third-party administrator (TPA), who processes and pays claims for a company. Predictive modeling software is becoming available through TPAs, ASOs, wellness companies, disease management companies and consultants that are actively working with the data. All of these companies have built systems to protect the data and privacy of employee populations.

The data is housed in an outside vendor’s server system and is heavily protected. This also protects the employer from having access to individual employee-related data, which could compromise the employer’s objectivity and the employee’s privacy. Use of predictive modeling software for health claims analysis can be configured in a variety of business models. One model used is for an employer to contract the analysis out to a third party – an independent company – to ensure their employees’ private health information is completely separated from the employer’s personnel. The independent company can access the data through a secured portal, conduct the analysis, and provide the results back to the employer or the employer’s agents.



COMPANY EXPERIENCES

Pitney Bowes saw the writing on the wall when their medical claims continued to escalate. With a history of successful management of their health insurance expenses, management was shocked when expenses spiked and they couldn't determine why. They couldn't find the cause because they didn't have enough data – the information they had from their insurance partners was insufficient. In the July 2004 issue of *CIO Magazine*, Alice Dragoon tells the story of the quest of Pitney Bowes medical director, Dr. Jack Mahoney, to regain control over his health care expenses. Pitney Bowes needed a "crystal ball," but they found the "next best thing in the form of predictive modeling: technology that employs either rules-based algorithms or artificial intelligence to predict (in this case) future health care expenses. Backed by a health care-savvy CEO, Mahoney and his HR counterpart, David Hom, set aside their pet theories about health care cost drivers, resisted the temptation of scope creep and convinced skeptical colleagues to trust the models' predictions." Their reward was a reduction of some and stabilization of most of their healthcare expenses. But Dr. Mahoney cautions, "you have to be able to stay with something long enough to see results."

Lea Malof, vice president of Health Management Services for United Medical Services, who uses predictive modeling software, advises companies of the need for a long-term strategy. Harnessing the power of predictive modeling can be daunting. "It's imperative to invest in data integrity and in the time to understand the data," Ms. Malof states. Just as Pitney Bowes discovered, Leah Malof concurs that it takes about two years to yield a positive ROI on the use of predictive modeling, at a minimum, and it is imperative to invest in a strategy, not just implement and expect results. The employer must be actively involved.

CONCLUSION

It seems like HR professionals all over lament the old Rodney Dangerfield mantra: "We just don't get no respect!" But the reality is that opportunities exist to quantify the impact of Human Resources and connect its efforts to the financial status and management of the firm. Human resources professionals need to begin to see themselves as risk managers who are strategically placed to manage the risk of human employees. And humans are inherently risky and unpredictable.

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About the Author

Kristie Evans spent more than 15 years as a human resources practitioner before founding HR Logistics LLC in 2002. The mission of HR Logistics is to ensure that HR, Finance, and Information Technology work together strategically and to provide Human Resources project management and consulting that is supported by strong business skills. HR logistics primarily works with mid-size organizations but also provides training and consulting to smaller businesses to enhance and maintain its business "edge" and its attunement to business challenges. Ms. Evans often speaks publicly and participates in many volunteer activities with IHRIM. Visit her company's Web site at www.hrlogistics.us to learn more.